have become better defined. This includes an understanding of when to treat patients with such manifestations, as well as the modalities best used.

Aspects of the following consequences of atherosclerosis in which vascular surgeons are frequently involved will be reviewed:

- current management of extra-cranial cerebrovascular disease
- role of endovascular aneurysm repair
- developments in the management of acute and chronic ischaemia of the lower limbs
- The importance of atherosclerotic risk-factor control in the management of late-stage manifestations of vascular occlusive disease.

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## BLOOD PRESSURE DEVICE ACCREDITATION GUIDELINES

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The management of hypertension is based on the accurate measurement of blood pressure and other clinical considerations. It is important that BP devices are tested against a standard to validate accuracy of readings. Very little attention has been paid to BP validation. Today there is a plethora of different devices available. Patients, professionals and healthcare facilities are having a hard time selecting which devices to use.

The 2005 National Hypertension Guideline outlined the selection of a validated device. The SAHS has now developed a programme, in collaboration with stakeholders, which uses international standards to accredit BP devices. The presentation will outline the process of validation and accreditation methods.

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## ROLE OF GENETICS IN HYPERTENSION

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The aim of this talk is to discuss the role of genetics in hypertension. Given the high prevalence of hypertension worldwide, optimal therapy is mandatory. Despite the general efficacy of blood pressure-lowering agents, variations in the responses to these agents are observed. Indeed, some patients show very poor, if any response, to certain agents. As there is no doubt that adverse cardiovascular outcomes can be prevented by effective blood pressure control, there is a need to understand the mechanisms of the heterogeneity in blood pressure responses to current therapy, with a goal towards the personalisation of antihypertensive therapy.

Current evidence indicates that genetics contributes up to 50% of the variance in blood pressure, hence supporting the relevance of research into the genetic basis of hypertension. Various approaches have been employed in order to try and identify which genes play a role in hypertension. Questions that need to be addressed are the role of genetics in the risk of hypertension, the role of genetics in the severity of hypertension, as well as the role of genetics in determining responses to medication.

To date, answers to these questions have been fraught with inconsistencies in outcomes, for which there are logical explanations. Importantly, hypertension is not a monogenic trait and hence gene–gene, gene–environment and haplotype approaches need to be employed. In addition, the heterogeneity of populations should also be considered, as subjects vary in many demographic respects as well as in ethnicity. Indeed, large differences in gene allele frequencies have been observed between ethnic groups. Examples will be presented (from data collected in South Africa) of each of these approaches (gene–gene, gene–environment, haplotypes) controlling for confounding demographic features in the context of addressing the role of genetics in (1) the risk of hypertension, (2) the severity of hypertension, and (3) in determining responses to medication.

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## NOCTURNAL DECREASES IN BLOOD PRESSURE ARE NOT ATTENUATED IN SUBJECTS OF AFRICAN COMPARED TO EUROPEAN DESCENT

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An inability to appropriately decrease blood pressure (BP) at night is associated with a substantial risk for cardiovascular events. Although nocturnal decreases in BP are thought to be attenuated in subjects of African compared to European descent, previous studies have employed small sample sizes and non-random selection procedures. Moreover, a meta-analysis has provided ambiguous outcomes.

As part of the African and European Programs on Genes in Hypertension, nocturnal decreases in BP (Spacelab monitors model 90207) in randomly selected subjects of African ($n$ = 671) descent were compared to nocturnal decreases in BP in subjects of European ($n$ = 458) descent who had comparable daytime systolic BP (SBP). Selected subjects of African (458) and European (419) descent had acceptable ambulatory BP data. The studies were performed on subjects living in urban communities in Africa and Europe, respectively. They used the same design and all measurements were standardised. Analysis was performed on the whole group and after excluding subjects who were receiving treatment for hypertension, had conventional BP measurements of ≥ 140/90 mmHg or had concomitant disease (African: $n$ = 257; European: $n$ = 213). Analyses were performed with age, gender, body mass index, smoking, drinking, occupation and education included as covariates.

As a lower daytime SBP was strongly associated with an attenuated decrease in nocturnal SBP ($n$ = 877; $r$ = 0.15; $p < 0.0001$), analyses were also performed with daytime SBP included as a covariate. No differences in nocturnal decreases in SBP (adjusted mean ± SEM, mmHg) were noted between subjects of African descent (total group = 12.29 ± 0.63; healthy group = 12.29 ± 0.63) and subjects of European descent (total group = 13.18 ± 0.61; healthy group = 13.18 ± 0.61) ($p$ = 0.37 for total group; $p$ = 0.82 for healthy group). A similar number of healthy subjects of African (42.0%) compared to European (39.9%) descent had a less than 10% decline in SBP at night (between ethnic groups adjusting for covariates: $p$ = 0.62 for total group; $p$ = 0.31 for healthy group).

**Conclusion:** These data show that when African subjects are compared with European subjects with similar daytime SBP, subjects of African descent living in Africa do not exhibit a reduced nocturnal decrease in SBP.

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